Comprehensive Nutrient Management Plan

The Comprehensive Nutrient Management Plan (CNMP) is an important part of the conservation management system (CMS) for your Animal Feeding Operation (AFO). This CNMP documents the planning decisions and operation and maintenance for the animal feeding operation. It includes background information and provides guidance, reference information and Web-based sites where up-to-date information can be obtained. This document shall remain in the possession of the producer/landowner.

Operation Identification: Farm Name:
Address:
City, State, Zipcode:
Telephone:

Plan Period: January 1, 2005 to December 31, 2010

Approved Conservation Planner and Certified CNMP Specialist
As an Approved Conservation Planner, I certify that I have reviewed the *Nutrient Management Plan* documents for technical adequacy and that the elements of the documents are technically compatible, reasonable and can be implemented.

Signature: _____ Date: _____

Name and Title: _____
Address: Telephone:
_____

Owner/Operator
As the owner/operator of this CNMP, I, as the decision maker, have been involved in the planning process and agree that the items/practices listed in each element of the CNMP are needed. I understand that I am responsible for keeping all the necessary records associated with the implementation of this CNMP.

Signature: _____ Date: _____

FARM SUMMARY

Farms, Inc. is located approximately 12 miles southwest of Town, Wyoming. The Feedlot is approximately 2 miles west of Town, WY and 1/8 of a mile from the River. The annual rainfall is between 5-9 inches.

The Feedlot has the capacity of 7000 beef cattle. The feedlot has never reached capacity and for several years has averaged the numbers of 2006. Cattle Inventory for 2005 was 945 weaned calves averaging 600 pounds, 235 beef cows averaging 1200 pounds, and 50 beef bulls averaging 1400 pounds for 210 days (7 months) mid October to mid May. At this time there are no plans to expand the numbers.

The mortality rate varies as at times animals arrive in ill health. All dead animals are removed from the lot with 48 hours and taken to the local landfill.

Soils on the irrigated cropland and hayland consist primarily of sandy loams , 0-8% slopes, and loam, 0-6 % slope. Both soils are well drained and have an available water capacity in the top five feet of 6.9". First is 35% of this complex and has the limitations of bedrock at 20-40 inches (available water holding capacity of 4.5") and a salinity factor of 2-4 mmhos. Soil complex, 1-15% slopes runs randomly through the area. Third soil is 40% of the complex and has an abrupt textural change of gravelly coarse sand at 27-40 inches in the soil profile. This limits the available water holding capacity to 5". The nearest surface water is River located to the south approximately 1/8 of a mile (660 feet). Elevation at the farmstead is 5000 ft.

Manure from the feeding operation is cleaned and stored next to the pens each spring. The Manure was spread and incorporated within 3 days in 2005 and the same in 2006. Manure storage has built up from several years of previous production and no utilization. The storage is not posing "an unacceptable condition" but the potential is there. Farm Inc. will actively pursue getting rid of the storage in the next few years so the operation is able to utilize most of the storage each year. Two retention ponds were installed to collect the 25 years, 24 hour event. There is an 8 feet berm to the south of the operation on the down gradient side of the pens and above the River. There is a 4 feet berm on the north side of the Feedlot also to divert clean water. As of now, there is nothing in the retention ponds. Liquid wastes will be manure tested. Liquid wastes will be pumped out within a short period of time and applied uniformly to fields north of the Feedlot. An estimated nutrient management plan was developed to show the correct utilization of the liquid waste.

Manure tests are done annually and within 60 days of an application. One soil test had an excessive level of salts 2.6 mmhos—this wasn't representative but from a localized problem area. Soil test (less than one foot) should be done on every 40 acres on similar soils, crop rotations, and nutrient applications. A separate soil test is necessary for the fields that have had a manure application within the last two years. Soil tests are taken from representative sites, ignoring poor spots, high spots and low spots in the field. A separate soil sample is taken when areas of concern are noted. The availability of nutrients in manure varies with climate conditions. An environmental assessment, the Phosphorus Index, is completed prior to any manure applications to calculate whether the application will be Nitrogen-based or Phosphorus-based. In most cases, the application rate has been a Nitrogen-based rate.

Much of the Farm Inc crop acres are leased land. The fields farmed each year vary when leases are terminated and others are started. Cropped acres exceed 800 acres and the crop rotation is generally 5-7 years of alfalfa with corn silage, sugarbeets and barley annually planted 3-4 years in the rotation. Sugar beets and malt barley are contracted and those numbers vary each year. Sugarbeets and barley quality is an important concern. Sugar beet petiole samples are taken mid season and a commercial fertilizer is applied to meet the crop needs. Farm Inc crop acres average 853 acres -- 400 acres of Sugar beets, 200 acres of Corn silage, 20 acres of Barley, 200 acres of alfalfa hay (75% alfalfa 25% grass), and 35 acres of grass hay. Crop yields are 22 tons sugarbeets and corn silage, barley hay at 4.5 tons or 100 bushels, and alfalfa 4.5 tons.

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Emergency Response Plan

In Case of an Emergency Storage Facility Spill, Leak or Failure

Implement the following first containment steps:

a. Stop all other activities to address the spill.
b. Use skid loader or tractor with blade to contain or divert spill or leak, if possible.
c. Call for help and excavator if needed.
d. Complete the clean-up and repair the necessary components.
e. Assess the extent of the emergency and request additional help if needed.

In Case of an Emergency Spill, Leak or Failure During Transport or Land Application

Implement the following first containment steps:

a. Stop all other activities to address the spill.
b. Call for help if needed.
c. If the spill posed a hazard to local traffic, call for local traffic control assistance and clear the road and roadside of spilled material.
d. Contain the spill or runoff from entering surface waters using straw bales, saw dust, soil or other appropriate materials.
e. If flow is coming from a tile, plug the tile with a tile plug immediately.
f. Assess the extent of the emergency and request additional help if needed.

Emergency Contacts

Department / Agency	Phone Number
County Fire Dept	(307)
Rescue Services	911
County Sheriff Dept	(307)

Available equipment/supplies for responding to emergency

Equipment Type	Contact Person	Phone Number
Tractor with Loader		(307)

Contacts to be made by the owner or operator within 24 hours

Organization	Phone Number
EPA Emergency Spill Hotline	(800) 424-8802 EPA Region 8 (303) 293-1788
WY DEQ	(307) 777-7781
County Health Department	(307)
Wind River Environmental Quality Commission	(307) 332-3164

Be prepared to provide the following information for Inspections and annual reports:

a. Your name and contact information.
b. Farm location and other pertinent identification information.
c. Description of emergency.
d. Estimate of the amounts, area covered, and distance traveled.
e. Whether manure has reached surface waters or major field drains.
f. Whether there is any obvious damage: employee injury, fish kill, or property damage.
g. Current status of containment efforts.

Biosecurity Measures

If checked, the indicated measures will be taken to prevent contaminants from contact to livestock/poultry or their housing (barns, pens, etc), feed or wastes, walking through narrowly confined pens/lots where animals are within reach, some visits are unavoidable to attain the goal of the visit so precaution measures can provide a level of protection.

	Visitor has not come from another farm that day or is not wearing unlaundered clothing worn at another farm.
X	You have informed visitor to park vehicles on paved or concrete areas, away from production sites on farms, to avoid contact with soil, mud, or manure.
	You have informed visitor of required coveralls, boots or other precaution measures you require.
	Feed-storage areas will avoid direct contact whenever possible. Feed storage barns, silos, feed troughs, and bunks, or water troughs will be visited on a limited basis as contaminated feed is primary route of infection for most diseases.
	Soap and water or an antibacterial gel will be used before entering and after leaving the premises to avoid transmitting disease agents from person to person.
	After returning to vehicle, a brush and approved EPA disinfectant solution (Virkon-S Oxonia Active/Oxycept 333) will be used to disinfect any equipment (survey equipment, shovels, camera…)

Plan for Catastrophic Death Animal Disposal

The following table describes how you plan to handle and dispose of catastrophic loss of animals in a manner that protects surface and ground water quality. You must follow all national, state and local laws, regulations and guidelines that protect soil, water, air, plants, animals and human health. Contact telephone numbers above immediately.

Fuel & Chemical Handling Check Sheet

If checked, the indicated measures will be taken to prevent fuel, chemicals and other contaminants from contaminating process waste water or storm water storage and treatment systems.

	If this facility has large fuel tank storage; there is a secondary containment around them.
	This is not a regulatory-agency permitted facility. This section does not apply.
X	All chemicals are stored in proper containers. Expired chemicals and empty containers are properly disposed of in accordance with state and federal regulations. Pesticides and associated refuse are disposed of in accordance with the FIFRA label.
	Chemical storage areas and tank mixing/loading areas are self-contained with no drains or other pathways that will allow spilled chemicals to exit the storage area.
	Emergency procedures and equipment are in place to contain and clean up chemical spills.
	Chemical handling and equipment wash areas are designed and constructed to prevent contamination of surface waters and waste water and storm water storage and treatment systems
	All chemicals are custom applied and no chemicals are stored at the operation. Equipment wash areas are designed and constructed to prevent contamination of surface waters and waste water and storm water storage and treatment systems.

Section 1. Background and Site Information

1.1. Resource Concerns

The CNMP is designed to address, at a minimum, the soil erosion and water quality concerns on your operation. The following soil and water quality concerns have been identified on your farm. ***Annual soil and manure analysis are required.*** Manure and process wastewater shall not be applied to frozen, snow-covered, or saturated soil.

Soil Quality Concerns		Water Quality Concerns		Other Concerns	
	Ephemeral Gully Erosion		Nutrients in Groundwater		Regulations
	Gully Erosion	**X**	Facility Wastewater Runoff		Air Quality; Odors, Ozone
	Sheet and Rill Erosion	**X**	Manure Runoff (Field Application)	**X**	Energy Reduction; Minimize Nutrient Costs
	Stream/Ditchbank Erosion	**X**	Silage Leachate		Neighbor Relations, Aesthetics
	Soil Compaction	**X**	Nutrients in Surface Water	**X**	Maximize Nutrient Utilization, Profitability
			Pesticides in Surface or Groundwater		Time and Acres Available for Manure Application

1.2. Aerial photo or map(s) with legal descriptions, field (name or number), acres

- **Identify surface waters (irrigation canals/ditches, riparian areas, wetlands, ponds, rivers, domestic well)**
- **Production Areas – Animal confinement area – open lots, housed lots, feedlots, confinement houses, stall barns, free stall barns, milk rooms, milk centers, cow yards, barn yards, medication pens, walkers, animal walkways, and stables. Manure Storage areas – lagoons, runoff ponds, storage sheds, stockpiles, pit storages, liquid impoundments, static piles, and composting piles. Raw materials storage area –feed silos, silage bunkers, bedding materials. Waste containment area- settling basins, any area used in the storage, handling, treatment or disposal of mortalities.**
- **Land application area (acres) all areas that may receive manure, litter and waste water during this year**
- **Identify filter strips or setback areas**
- **Identify land you lease and life of lease – you operate but owned by another**
- **Identify other land that you apply manure to but owned / operated by others**

Section 2. NRCS Conservation Plan (Land Treatment and Farm Headquarters)

(Optional) NRCS Conservation Plan of Planned Conservation Practices & Alternatives

Section 3. Manure and Wastewater Handling and Storage

(See Engineering Design(s))

3.1. Manure Storage 2006 Year

Storage	Year	Type of Storage	Pumpable or Spreadable Capacity	Annual Manure Produced* in a Year Cu ft/33 = Tons	Maximum Days Of Storage Not to exceed 356 days
Open Lot	2005	Stockpile + Bedding	1740 Tons*	1740Tons	210 days
West Pond	2005	25 yr 24 hour storm Retention Pond	2.12 acre feet	Zero-No surface run off	
East Pond	2005	25 yr 24 hour storm Retention Pond	1.31 acre feet	Zero-No surface run off	

*** Attach WY-ECS=45A, WY-ECS-45B step 3d.** See details for total in following table.

3.2. Animal Inventory 2006 Year

Animal Group	Type or Production Phase	Number of Animals	Average Weight (Lbs)	Confinement Period	Storage Where Manure Will Be Stored	Annual Manure Production
Beef Feeder Calves	Beef feeder calves	945	600	Mid October-Mid May	Lot	948
Beef feedlot	Fatten bulls	50	1400		Lot	158
Beef feedlot	Fatten cows	234	1200		Lot	634
						1,740 Total

(1) Number of Animals is the average number of animals that are present in the facility at any one time.
(2) Manure production worksheet WY-ECS-45a,b Step 3d.Complete for each age group and enter total in Table 3.1.

3.3. Mortality Management

To decrease non-point source pollution of surface and ground water resources, reduce the impact of odors that result from improperly handled animal mortality, and decrease the likelihood of the spread of disease or other pathogens, approved disposal methods should be implemented in the handling of normal mortality losses.

COUNTY or TRIBAL

Follow County or Wind River Environmental Quality Commission rules/regulations for animal disposal.

Example: Do not dispose of the animal in water drainages, and if an animal is disposed in a way that others may deem unacceptable, the animal disposal method could result in a nuisance violation.

STATE

Wyoming Department of Environmental Quality (DEQ) rules & regulations for animal disposal within 48 hours. (Wyoming Statute 35-10-104)

1. Operator may bury the animal on their property provided the following criteria are met: a minimum of two feet of cover and cannot be in contact with groundwater.
2. Operator may haul the animal to a disposal area on their property provided it is at least ½ mile from human habitation, and cannot be in contact with surface water.
3. Dead animals from animal operations are considered “trade wastes”. Trade wastes from any industry may not be burned as a method of removal or disposal unless the operator has an air quality permit allowing them to burn trade wastes as a disposal method and the operator has a licensed incinerator in which to burn the trade waste.

CITY

Animals may be taken to city landfills.

Planned Method of Disposal

Type of Livestock	Weight of Livestock	Number of Mortalities	Disposal Method
Calves	500	12	Landfill
Cows	1200	5	Landfill

Section 4. Soil and Environmental Risk Assessment

Complete these tables for all fields nutrients are applied to:

4.1. General Soil Information Soil Report: Non-Technical Soil Description Soils Report

Field	Map Unit old –new symbol	Soil Component Name	Surface Texture	Slope Range (%)	Water Table* (in.)	Drainage Class	Available Water Holding Capacity Top 5 feet (in)	Permeability	Salinity mmhos/cm
1-3	218-003	Griffy-Saddle-Wallson	Sandy loam	0-8%	NA-none	Well drained	6.9	Moderate	Wallson 2.0-4.0
4-6	e11-097	Ethete	Loam	0-6%	NA-none	Very deep	7.0	Moderate	
7-12	3ell - 086	Ethete-Emblem	Loam	1-15%	NA-none	Well drained	9.2	Moderate	
13-21	205-006	Youngston-Lostwells	Loam	1-3%	NA-none	Well drained	12.0	Moderate	Youngston 2.0-8.0
22-25	301-005	Binton	Silt Loam	1-3%	NA-none	Well drained	11.7	Moderate	

*** NA=No water table Coarse textured soils** are sands, loamy sands, sandy loams**. Medium-textured soils** are silts, silt loams, loams, sandy clay loams. **Fine textured are** sandy clays, clay loams, silty clay loams, silty clays, and clays.

4.2. Environmental Risk Assessment 2006 Year

Nitrogen Leaching Index – Agronomy Note 25 (> 50# N of agronomic rate is applied and/or Soil test N >25 ppm)

Field	Soil Test N (ppm)	Nitrogen Application Rate	Net Score	Risk	Pounds of Nitrogen applied over agronomic rate.
4	7	12 Ton x #7 N	9	Medium	1#

4.3 Environmental Risk Assessment for each field receiving a manure application. 2006 Year

Wyoming Phosphorus Index – Agronomy Note 15 (Mandatory if manure is applied and/or soil test P >18 ppm.)

Field	Soil Test P (ppm)	P_2O_5 Application Rate	Net Score	Risk	Nitrogen or Phosphorus-Based Application Rate
4	39	12Ton x 17# = #204	34	Medium	Nitrogen - Based application rate

Section 5. Nutrient Management

5.1. Annual Soil Test Data — 2006 Year

Field	Test Year	NO_3-N (ppm)	P	K	Mg	Ca	Na	Units	Soil pH	OM (%)	CEC (meq/ 100g)	P Test Used	EC (mmhos/ cm)
4 –28 ac	3/2006	7	22	145				ppm	7.7	1.48	18.1	Olsen	1.7

5.2. Annual Manure Nutrient Analysis — 2006 Year

Manure Source	Dry Matter (%)	Total N	Organic N	NH_4-N	NO_3-N	Total P_2O_5	Total K_2O	Max. Avail. N	Avail. P_2O_5	Avail. K_2O	Units	Analysis Source	Date of Most Recent Analysis
Lot	69.7	28.0	22.23	1.5	4.39	17 (16.45)	45.17	8.8	9.87	36	Lb/Ton	University's Lab	11/2005

(1) (N03-N avg 1.5) + (Ammonia N is 1.5 avg) + Organic N = Total N
(2) Wyoming assumes that 45% of the organic manure nitrogen, 90% of manure phosphorus and 95% of manure potassium is crop available the first year.

Suggestions for manure testing: Annually manure sample as close to the time of application as practical, at least 30 days before application. For each manure pile or lagoon, get 6 to 20 subsamples and mix them together. If you cannot get the sample to the lab immediately, store it in a freezer until you can deliver it. The analysis should include moisture content, total nitrogen (TKN, NH_3-N, Organic N, NO_3-N), phosphorus, and potassium, and organic matter. Ammonia should also be included for liquid manures, but is usually not necessary for solid manures.

Suggestions for soil testing: Soil sample annually prior to nutrient applications. It is recommended to soil test within 90 days prior to planting. A representative sample should be taken for each crop and major soil change. Avoid the field edges, low or high areas of a field. Use an accredited laboratory as our high pH soils need soil test P analyzed by the Olsen method (bicarbonate). Air-dry the soil sample prior to sending it.

5.3A. Whole Farm Nutrient Use Summary Manure Applications Records are in Section 5.6 and 5.7

Planned Crops and Recommendations based on Land Grant University references 2006 Year

Field	***Acres***	***Crop***	**Avg Yield**	**Recommended N & P & K** --------lb/acre--------			**Manure Application Rate** tons/acre or -1000 gal/acre-[1]	Manure Applied Per Field-- ton/gal x field acres	COMMERICAL FERTILIZER	**DATE**
				N	P_2O_5	K_2O				
4	28.0	Barley	100 bu	131	14[3]	0	12T(11-22-39) April 2006	336 Tons	102#(46-0-0)=47#N 54# (46-0-0) =23#N	6/06
Whole Farm Totals								336 Tons		

[1] WY-ECS-45a, b Step 8 (11-22-39) and considers first year availability for Nitrogen, Phosphorus, and Potassium from manure test values in step 4. (AWMFH Table 11-9) 11 Ton x 11# N = 121# N, 11 Ton x 22# P205 = 242# P_2O_5, and 11 Ton x 39# K = 429# K_20 applied on each acre.

Potassium is naturally high in western soils but most is not readily available to the plant. Manure applications add high levels of potassium. Caution should be taken when crop is used for forage as a buildup of potassium will be taken up with the plant and may prove toxic to cattle (ie: milk fever). Manure applications may not cover all the nutrients so an additional commercial fertilizer application may be necessary to meet crop needs.

54# of urea nitrogen (46-0-0) was applied. This was probably not necessary unless a tissue test showed more nitrogen was necessary to meet crop needs. 54# x .46 = 24.8# . Another Ton of manure could be applied instead. WY-ECS-44 provides a way to balance nutrients, manure and fertilizer.

A manure application of 11 Ton (11-22-39) provides an excess of P. A Phosphorus Index is calculated prior to a manure application. If it has a Low or Medium Index -Nitrogen-based application rate than a manure application is acceptable. If the Phosphorus Index was High, only 1/3 of an application rate can be applied so it is recommended to apply manure to another field/crop really needing the phosphorus. No application if the Phosphorus Index is rated Very High. See NRCS Agronomy Technical Note 15 Phosphorus Index. From the manure test values Organic nitrogen is only 45% available the first year, Phosphorus 90%, Potassium 95%. Nitrogen from that same application is 25% available the second year.

See Table 3.2 for total manure produced. If it is not applied, note in farm summary where and how it is stored.

******Producer Output or Step 13 & 16 on WY-ECS-45A shows acres and application rate to utilize the manure produced.**

5.3B FARM INC -- CROP SUMMARY 853 acres

2005,6 Crop Year – approximately 400 acres Sugarbeets, 200 acres Alfalfa Hay, 200 acres Corn silage, 200 acres Malt barley, 35 acres Grass Hay (75% grass, 25% alfalfa)

Field Name Number	Acres	2005 Crop	2006 Crop	Crop Yield		Field Name Number	Acres	2005 Crop	2006 Crop	Crop Yield
1	19.4	Alfalfa	Corn	22 Ton		14	68.	Beets	Barley	4.5 Ton
2	35.0	Beets	Barley	100 bu		15	65.	Corn silage	Beets	22 Ton
3	32.4	Corn silage	Corn grain	50 bu		16	34.7	Alfalfa	Alfalfa	4.5 Ton
4	8.0	Beets	Barley	100 bu		17	36.3	Corn	Barley	100 bu
5	102.	Beets	Barley	100 bu		18	23.0	Beets	Corn	22 Ton
6	15.5	Alfalfa	Alfalfa	4.5 Ton		19	113	Alfalfa	Alfalfa	4.5 Ton
7	29.5	Alfalfa	Alfalfa	4.5 Ton		20	75.	Barley	Beets	22 Ton
8	6.1	Beets	Barley	100 bu		21	37.5	Beets	Corn	22 Ton
9	32.	Corn silage	Corn	22 Ton		22	46.4	Beets	Beets	22 Ton
10	40.	Grass	Grass	Grazed		23	33.	Grass	Grass	Grazed
11	14.2	Beets	Beets	22 Ton		24	68.	Corn silage	Barley	100 bu
12	9.3	Grass	Grass	Grazed		25	130.	Barley	Beets	22 Ton
13	58.5	Barley	Beets	22 Ton						

2003,4 Crop Year - approximately 400 acres Sugarbeets, 200 acres Alfalfa Hay, 200 acres Corn silage, 200 acres Malt barley, 35 acres Grass Hay (75% grass, 25% alfalfa)

Field Name Number	Acres	2003 Crop	2004 Crop	Crop Yield		Field Name Number	Acres	2003Crop	2004 Crop	Crop Yield
1	19.4	Alfalfa	Alfalfa	4.5 Ton		14	68.	Alfalfa	Corn grain	75 bu
2	35.0	Corn	Corn	22 Ton		15	65.	Barley	Beets	22 Ton
3	32.4	Alfalfa	Alfalfa	4.5 Ton		16	34.7	Corn silage	Beets	22 Ton
4	28.0	Alfalfa	Corn	22 Ton		17	36.3	Beets	Corn	22 Ton
5	102.	Beets	Barley	100 bu		18	23.0	Beets	Barley hay	4.5 Ton
6	15.5	Barley	Alfalfa	4.5 Ton		19	113	Beets	Beets	22 Ton
7	29.5	Barley	Beets	22 Ton		20	75.	Alfalfa	Corn	22 Ton
8	6.1	Corn silage	Barley	100 bu		21	37.5	Beets	Barley	100 bu
9	32.	Beets	Barley	100 bu		22	46.4	Alfalfa	Corn	22 Ton
10	40.	Grass	Grass	Grazed		23	33.	Grass	Grass	Grazed
11	14.2	Corn silage	Barley	100 bu		24	68.	Corn silage	Beets	22 Ton
12	9.3	Grass	Grass	Grazed		25	130.	Beets	Barley	100 bu
13	58.5	Corn silage	Beets	22 Ton						

5.4 Manure Application Setback Distances

Feature	Distance (feet)
Down-gradient surface waters of State (non-vegetative buffer—bare ground) Including irrigation ditches	**100**
Down-gradient surface waters of State (vegetative buffer) Including irrigation ditches	**35**
Drinking water well or intake (non-vegetative buffer—bare ground)	100
Drinking water well or intake (vegetative buffer)	35
Stream (non-vegetative buffer—bare ground)	100
Stream (vegetative buffer)	35
Property boundary	0
Lake (non-vegetative buffer—bare ground)	100
Lake (vegetative buffer)	35
Conduits to surface waters of State (non-vegetative buffer—bare ground) Including irrigation ditches	**100**
Conduits to surface waters of State (vegetative buffer) Including irrigation ditches	**35**
Sinkhole (non-vegetative buffer—bare ground)	100
Sinkhole (vegetative buffer)	35

Source: Code of Federal Regulations (40 CFR 412.4)

5.5 Field Information and Setbacks

Field ID	Total Acres	Spread-able Acres	FSA Farm	FSA Tract	Predominant Soil Type	Slope (%)	Manure Application Setback(s) (ft)
all	853	853			097 Ethete		Manure will not be spread within 35 ft of irrigation canals

5.6. On-site Land Application Recordkeeping ATTACH annual Soil and Manure Analysis Reports 2006 Year

Date	Field	Crop	Applied Acres	Manure Source	Litter Ver. 2.51	Process Waste water	Method of Application	Rate/Acre	Equipment	Days to Incorporate	Loads, Speed or Time
April-23 2006	4	Barley	28.0	Lot	In Manure	n/a	Broadcast	12.0 Tons	Solid spreader	3	132 Lds

5.7. Manure Application Climate Record Recordkeeping 2006 Year

App. #	Hauler's Name (1)	Ground Cover % (2)	Soil Condition (3)	Air Temp. (4)	Wind Speed (5)	Wind Dir. (6)	Weath-er (7)	Rain Before (8)	Rain After (9)	Notes/Comments Do not apply to frozen or snow covered land. Do not apply While it is raining or snowing.
1	Driver name	30%	Dry	40	10	N	P Cloudy	.20"	.55"	small storm events 3/8/06-3/15/06 132 loads
2										
3										
4										
5										

1) Name or initials of the person who applied the manure. (2) Percent residue or ground cover at time of application.
(3) Soil condition at time of application: Dry, Firm, Wet, Muddy (4) Air temperature at time of application.
(5) Wind speed at time of application: Calm (0-2 mph), Light (2-5 mph), Breezy (5-15 mph), Windy (>15 mph).
(6) Wind direction at time of application: N, NE, E, SE, S, SW, W, NW.
(7) Weather condition at time of application: Sunny, Partly Cloudy, Cloudy
(8) Amount of rainfall during the 24 hours prior to application. (9) Amount of rainfall during the 24 hours after application.

5.8. Commercial Fertilizer and Irrigation Water Nitrate Applications 2006 Year

Month-Year	Field	Crop	Fertilizer Analysis	Irrigation Water Analysis	Application Method	Material Rate/Acre	Acres Covered.	Area of Field	Total Material Applied	N (Lbs/A)	P_2O_5 (Lbs/A)	K_2O (Lbs/A)
June. 2006	4	Barley	11-52-0 46-0-0	none	Surface broadcast/incorp <2 days; Fertigation side dress mid season		28.0	Entire	100# (11-52-) 250# (46-0-0)	126	52	

(1) With commercial fertilizers, enter the analysis in the form of N-P_2O_5-K_2O (examples: Urea 46-0-0, Monoammonium phosphate is 11-52-0).
(2) With irrigation water, enter the nitrate concentration in ppm.

Section 6. Feed Management

Beef nutrition self-assessment: Circle appropriate answer or delete incorrect one.

Feeding Practices	Reduces N Excretion	Reduces P Excretion	Reduces Purchased Feed Used	Is this option currently used on your operation?	Is this a viable option for future adoption?
· Group cattle by weight and class and formulate multiple rations	✖	✖		**Yes No**	**Yes No**
· Feed ration 11-12% CP, 29% RUP for growing/finishing	✖			**Yes No**	**Yes No**
· Feed phosphorus according to Average Daily Gain: .5 lb = .12%; .75 lb = .14%; 1.0 lb = .16%; 1.5 lb = .17%; 2.0 lb = .18%; 2.5 lb = .21%; 3.0 lb = .24%; 3.5 lb = .28%; 4.0 lb = .34%		✖		**Yes No**	**Yes No**
· Feed ration with 9% CP and 30% RUP for late lactation cows and phosphorus content = .12 - .21% depending on stage of life	✖			**Yes No**	**Yes No**
· Improve quality of home-grown feeds	✖	✖	✖	**Yes No**	**Yes No**
· Increase dry matter intake	✖		✖	**Yes No**	**Yes No**
· Blend legume and corn silage in ration to meet protein requirements	✖			**Yes No**	**Yes No**
· Test all forages and feed ingredients and adjust rations accordingly	✖	✖	✖	**Yes No**	**Yes No**

CP=crude protein; RUP=rumen undegradable protein (given as % of total CP).

Information in this section was modified from Livestock and Poultry Environmental Stewardship Program, Lesson 12, Feeding Dairy Cows to Reduce Nitrogen, Phosphorus, and Potassium Excretion into the Environment, by Rick Grant of University of Nebraska.

Dairy nutrition self-assessment: Circle appropriate answer or delete incorrect one.

Feeding Practices	Reduces N Excretion	Reduces P Excretion	Reduces Purchased Feed Used	Is this option currently used on your operation?	Is this a viable option for future adoption?
· Group cattle by milk production or lactation stage and formulate multiple rations	✖	✖		**Yes No**	**Yes No**
· Feed ration with % P of 0.49% for fresh cows (first 3 weeks)		✖		**Yes No**	**Yes No**
· Feed ration with % P of 0.28%-0.41% for early to mid-lactation cows		✖		**Yes No**	**Yes No**
· Feed ration with 17% CP and 40% RUP for fresh cows	✖			**Yes No**	**Yes No**
· Feed ration with 16%-18% CP and 36%-38% RUP for early to mid-lactation cows	✖			**Yes No**	**Yes No**
· Feed ration with 14% CP and 30% RUP for late lactation cows	✖			**Yes No**	**Yes No**
· Improve quality of home-grown feeds			✖	**Yes No**	**Yes No**
· Increase dry matter intake	✖		✖	**Yes No**	**Yes No**
· Monitor MUN (should be between 12 and 18 mg/dl)	✖			**Yes No**	**Yes No**
· Blend legume and corn silage in ration to meet protein requirements	✖			**Yes No**	**Yes No**
· Test all forages and feed ingredients and adjust rations accordingly	✖	✖	✖	**Yes No**	**Yes No**

CP=crude protein; RUP=rumen undegradable protein (given as % of total CP); MUN=milk urea nitrogen.

Section 7. Other Utilization Options: Composting

Section 8. Recordkeeping Forms

8.1. Manure Exports off the Farm *Manure test was given to Receiver* 2006 Year

Manure Source	Date	Amount Gal or Ton	Receiving Operation	Address	Contact	Phone
Lot	4/2006	300 ton	John Doe	123 North Road	John Doe	xxx-xxx-xxxx

8.2. Discharge(s) Summary 2006 Year

Manure Source	Date	Amount Gal or Ton	Manure Destination	
		00		

8.3. Manure Imports onto the Farm 2006 Year

Manure's Animal Type and Form	Date	Amount Gal or Ton	Originating Operation	Address	Contact	Phone
		00				

8.4. Inspection of Equipment/Monitoring Records 2006 Year

Attach the following Wyoming DEQ Recordkeeping Documents:

- ✓ CAFO Weekly Storage and Containment Structure Inspections Log Sheet
- ✓ Water Line Inspection Log Sheet
- ✓ CAFO Nutrient Land Application Log Sheet (or above table 5.6, 5.7)
- ✓ Manure, Litter, and Process Wastewater Transfer Record Form, if applicable

All Recordkeeping forms are to be kept current and available at the facility.

8.5. Operational Changes Due to Soil Tests, Land Leases, Monitoring Records … for 2007 Year

Farm plans to apply manure to many corn and small grain fields this fall and marketing any manure left to remove most of existing years storage. Farm plans on keeping storage limited to annual production, so most can be utilized by land application each year.

RECORDKEEPING AND TESTING
Maintain records on–site for five years.
Annual soil and manure analysis are required.

Is a written Operation and Maintenance (O & M) plan maintained and available to key employees
on the following:

- Manure storage, operation, and maintenance? ____Yes ____No
- How to inspect storage facilities? ____Yes ____No
- There is an emergency response plan? ____Yes ____No
- Manure equipment is calibration prior to application? ____Yes ____ No

8.6 ANNUAL REPORT

Submit to: **Wyoming Department of Environmental Quality**
WYPDES Program, Water Quality Division (307) 777-7090
Herschler Building, 4 West 122 West 25th Street
Cheyenne, WY 82002

8.7 FARM Crop Nutrient Recommendations Planned for Crop Year 2006 Year

FARM Crop Nutrient Recommendations Use University of Wyoming's "Guide to Wyoming Fertilizer Recommendations" B-1045, the following crop nutrient needs were determined. Texture of soil changes should be noted.

SOLID WASTE
The **solid manure analysis** from the feedlot was taken on
NO_3-N – 4.39 lbs/ton Nitrate Nitrogen
NH_3-N – 1.40 lbs/ton Ammonia Nitrogen - estimated
N --23.03 lbs/ton Organic Nitrogen
P_20_5 – 16.45 lbs/ton Oxidized Phosphorus
K_20 – 45.17 lbs/ton Oxidized Potassium

Soil test was taken November 16, 2006 to a depth less than one foot
Organic Matter was 1.48% pH = 8.0
Nitrate N 7 ppm
Phosphorus 22 ppm
Potassium 145 ppm

Farm Inc Crop Inventory
Corn silage yield 22 Ton, Alfalfa 4.5 ton, Barley Hay 120 bu, Sugar beets 22Ton

The University's Guide gave recommendations for a 30 Ton yield of corn, since Farm's yield is less, nitrogen, phosphorus and potassium required will also be less. University's Guide 100 bu yield of barley, since Farm's yield is more, nitrogen, phosphorus and potassium required will also be more.
****Input these recommendations in Step 10 of WY-ECS-45A,B or Section 1 of WY-ECS-44.

****

Corn silage Table B page 21, Organic Matter 1.48%, Nitrate N 7 ppm, Table 9, page 22 Phosphorus is 22 ppm, and majority of farm is medium textured.
Table 10, page 22 Potassium is 145 ppm
Nitrogen 30 tons-22 tons = 8 tons less Phosphorus 30 tons – 22 tons = 8 tons less
9# x 8 tons = 72 # less Nitrogen 3# x 8 tons = 24 # less P_20_5
205# - 72# = 133 # N/acre recommended 30-24$ = 6 # P_20_5 recommended
Potassium >100 = 0

****

Alfalfa 80% legume Table 5 page 17, Organic Matter 1.48%, Nitrate N 7 ppm,
Table 6, page 18 Phosphorus is 22 ppm, and majority of farm is medium textured.
Table 7, page 18 Potassium is 145 ppm
Nitrogen 6 tons-4.5 tons = 1.5 tons less Phosphorus 6 tons – 4.5 tons = 1.5 tons less
40# x 1.5 tons = 60 # less Nitrogen 15# x 1.5 tons = 22.5 # less P_20_5
30# - 60# = (30) # N/acre surplus 25# -22.5# = 2.5 # P_20_5recommended
Potassium >100 = 0 No recommendation of nutrients to be applied.

****

Sugar Beets Table 26 page 35, Organic Matter 1.48%, Nitrate N 7 ppm,
Table 27, page 36 Phosphorus is 22 ppm, and majority of farm is medium textured.
Table 28, page 36 Potassium is 145 ppm
Nitrogen 30 tons-22 tons = 8 tons less Phosphorus 30 tons – 22 tons = 8 tons less
9# x 8 tons = 72 # less Nitrogen 3# x 8 tons = 24 # less P_20_5
195# - 72# = 123 # N/acre recommended 50# -24# = 26 # P_20_5 recommended
Potassium >120 = 0

****

Small Grain 100 bu barley (1.55 bu), 135 bu oats (1.15bu), 90 bu wheat (1.72bu) N
100 bu barley (0.7 bu), 135 bu oats (0.5bu), 90 bu wheat (1.0 bu) P_20_5
Barley 120 bu Table 14 page 26, Organic Matter 1.48%, Nitrate N 7 ppm,
Table 15 page 27 Phosphorus is 22 ppm, and majority of farm is medium textured.
Table 16, page 27 Potassium is 145 ppm
Nitrogen 100 bu -120 bu = 20 bu more Phosphorus 100 bu - 20 bu = 20 bu more
1.55# x 20 bushels = 31 bu more Nitrogen 0.7# x 20 bushels = 14 bu more
100# + 31# = 131 # N/acre recommended 0+ 14# = 14# P_20_5 recommended
Potassium >73 = 0

****Producer Output or Step 13 & 16 on WY-ECS-45A shows acres and application rate to utilize the nutrients produced.**

LIQUID WASTE
The **liquid manure analysis** estimated since no surface runoff is available, data from the NRCS Agriculture Waste Management Field Handbook (AWMFH) will be used for a planned event.
WY-ECS-45B Step 3d. 49(1000 gal). Nitrogen-Based Application Rate will require 23 acres of corn.

Corn silage, 22 Ton Yield Table B page 21, Organic Matter 1.48%, Nitrate N 7 ppm,
Table 9, page 22 Phosphorus is 22 ppm, and majority of farm is medium texture
Table 10, page 22 Potassium is 145 ppm
Nitrogen 30 tons-22 tons = 8 tons less Phosphorus 30 tons – 22 tons = 8 tons less
9# x 8 tons = 72 # less Nitrogen 3# x 8 tons = 24 # less P_20_5
205# - 72# = 133 # N/acre recommended 30-24$ = 6 # P_20_5 recommended
Potassium >100 = 0

Section 9. Online References

Wyoming Nutrient Management Plan Technical Standards

http://deq.state.wy.us/wqd/WYPDES_Permitting/WYPDES_CAFO/Nutrients/4-0944.pdf

WYDEQ Water Quality Rules and Regulations, Chapter 2, Appendix G

Concentrated Animal Feeding Operations (CAFO)

http://deq.state.wy.us/wqd/WQDrules/Chapter_02.pdf

North American Proficiency Testing Program (NAPT-PAP)
Certified Soil Testing Labs: http://www.naptprogram.org/pap/

Certified Manure Testing Laboratories:
http://www2.mda.state.mn.us/webapp/lis/manurelabs.jsp

Crop Fertilizer Recommendation Guidelines
University of WY Fertilizer Guide B-1045 *http://uwadmnweb.uwyo.edu/soilFert/*

Manure Equipment Calibration

http://www.ces.purdue.edu/extmedia/ID/ID-309.pdf

Manure Nutrient Availability
WY USDA-NRCS http://www.wy.nrcs.usda.gov/ eFOTG (electronic Field Office Technical Guide)
Section 1, Table of Contents/Agronomy Technical Notice No.13 Soil and Manure testing procedures
Agronomy Tech Note 11 Nutrient Management Balance Jobsheet & Instructions
Agronomy Tech Note 12 Organic Manure (Solid-A, Liquid-B) Jobsheet & Instructions
Agronomy Tech Note 19 Nutrient Management Plan, CNMP Checklist
Agronomy Tech Note 20, 24 Manure Applications
Agronomy Tech Note 15 Phosphorus Index
Agronomy Tech Note 25 Nitrogen Index

Section IV, 590 Nutrient Management Standard, Specification, Job Sheets WY-ECS-44 Nutrient Balance of Commercial fertilizer and Manure, WY-ECS 45a Solid manure production, WY-ECS- 45b Liquid slurry production, WY-ECS-60 AFO/CAFO Inventory, WY-ECS-86 CNMP Template

Best Management Practices for Nitrogen Fertilizer
http://www.ext.colostate.edu/pubs/crops/xcm172.pdf

Best Management Practices for Phosphorus Fertilizer
http://www.ext.colostate.edu/pubs/crops/xcm175.pdf

National Engineering Handbook: Part 651 AWMFH Agricultural Waste Management Field Handbook http://directives.sc.egov.usda.gov/